The following Checklist material consists of a general section that identifies factors that may affect or involve Electrical, Electronic or Electromechanical (EEE) parts but may also involve unrelated mechanical and structural parts of a spacecraft system, followed by EEE parts specific considerations.

General

1. Does the project have a plan for materials control?
2. Does the material control plan specifically identify pure tin, cadmium and zinc as materials to be controlled?
3. Is the project aware that pure tin-plating in particular represents a significant risk of on-orbit electrical failures due to the growth of tin whiskers?
4. Does the project have a process to ensure that pure tin plated parts are not used unless specifically waivered?
5. Does the process to control the use of pure tin specifically require sample verification testing to ensure platings are not pure tin?
6. Does the project have similar controls in place for cadmium and zinc, which can also grow whiskers and in addition outgas potentially toxic fumes under certain circumstances?

EEE Parts Specific

Parts Management and Control:

1. Does the project have a parts management plan (PMP)?
2. Has the project involved EEE parts experts at an early stage of design so that a proper balance between parts reliability, cost, availability, functionality and risk has been achieved for the general parts reliability level selected for the project?
3. Have designs, parts lists and individual parts been scrutinized by EEE parts experts for reliability and application concerns and evaluated for suitability to meet mission risk requirements?
4. Is there a documented risk assessment for the as designed parts list (ADPL)?
5. Does the PMP contain specific requirements for the selection, qualification, screening and control of potentially high risk items that include: hybrids, application specific integrated circuits (ASICs), commercial-off-the-shelf (COTS) parts and plastic encapsulated microcircuits (PEMs)?
6. Does the PMP contain specific requirements for the selection, qualification, screening and control of parts that are not listed in a recognized spaceflight suitable parts list, such as MIL-STD-975, the NASA GSFC Preferred Parts List (PPL), the NASA Parts Selection List (NPSL at http://nepp.nasa.gov/npsl/index.htm) or the contractor's Approved Parts List (if acceptable to the project)?
7. Does the PMP contain requirements to destructively analyze (DPA) potentially high risk items as described in 5 and 6 above?
8. Does the PMP contain requirements for the evaluation of heritage parts to ensure that they are not negatively impacted by design or process changes since they were last procured, or have not become the subject of GIDEP or other quality alerts?

Radiation:

1. Does the project have a radiation hardness assurance plan?
2. Has the project involved radiation effects experts at an early stage of design so that designs, parts lists and individual parts can be scrutinized for radiation hardness assurance (RHA) problems before designs are cast in concrete?
3. What radiation design margin (RDM) will be used for the project, and has the value of this RDM been justified through supporting data, analysis and arguments?
4. Does the project have technical penetration, awareness and oversight of contractor and subcontractor RHA procedures, plans and implementation methods?
5. Have radiation environment calculations been performed that provide the necessary radiation requirements for the mission?
6. Have these calculations been extended to include shielding effects of the spacecraft structure, electronics boards and boxes, and any special shielding that may be used?
7. Have new, unfamiliar technologies, such as photonics, non-volatile memory and RF, that will be used in the application been thoroughly checked for unexpected or unusual radiation effects, such as the strong sensitivity to Total Ionizing Dose (TID) of optical fibers at low temperature?
8. Have spacecraft charging effects due to low energy components of the electron environment been taken into account?
9. Have hybrids been thoroughly checked and analyzed to be sure there are no potentially serious RHA problems?
10. Does the project use EEE Parts with RHA designators in the part number to assure/control homogeneity/hardness for both TID and Single Event Effects (SEE)?

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